

Prototype Development of Knitted Buoyant Swimming Vest for Children

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Abstract : The use of buoyant vests incorporated with swimsuits can develop children's confidence in the water, particularly for novice swimmers. Consequently, parents intend to purchase buoyant swimming vests for the children to reduce their anxiety to water. Although the conventional buoyant swimming vests can provide the buoyant function to the wearer, their bulkiness and hardness make children feel uncomfortable and not willing to wear. This study aimed to apply inlay knitting technology to design new functional buoyant swimming vests for children. This prototype involved a shell and a buoyant knitted layer, which is the main media to provide buoyancy. Polypropylene yarn and 6.4 mm of Expandable Polyethylene (EPE) foam were fabricated in Full needle stitch with inlay knitting technology and were then linked by sewing to form the buoyant layer. The shell of the knitted buoyant vest was made of Polypropylene circular knitted fabric. The structure of knitted fabrics of the buoyant swimsuit makes them inherently stretchable, and the arrangement of the inlaid material was designed based on the body movement that can improve the ease with which the swimmer moves. Further, the shoulder seam is designed at the back to minimize the irritation of the wearer. Apart from maintaining the buoyant function to them, this prototype shows its contribution in reducing bulkiness and improving softness to the conventional buoyant swimming vest by taking the advantages of a knitted garment. The results in this study are significant to the development of the buoyant swimming vest for both the textile and the fast-growing sportswear industry.

Keywords : knitting technology, buoyancy, inlay, swimming vest, functional garment

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